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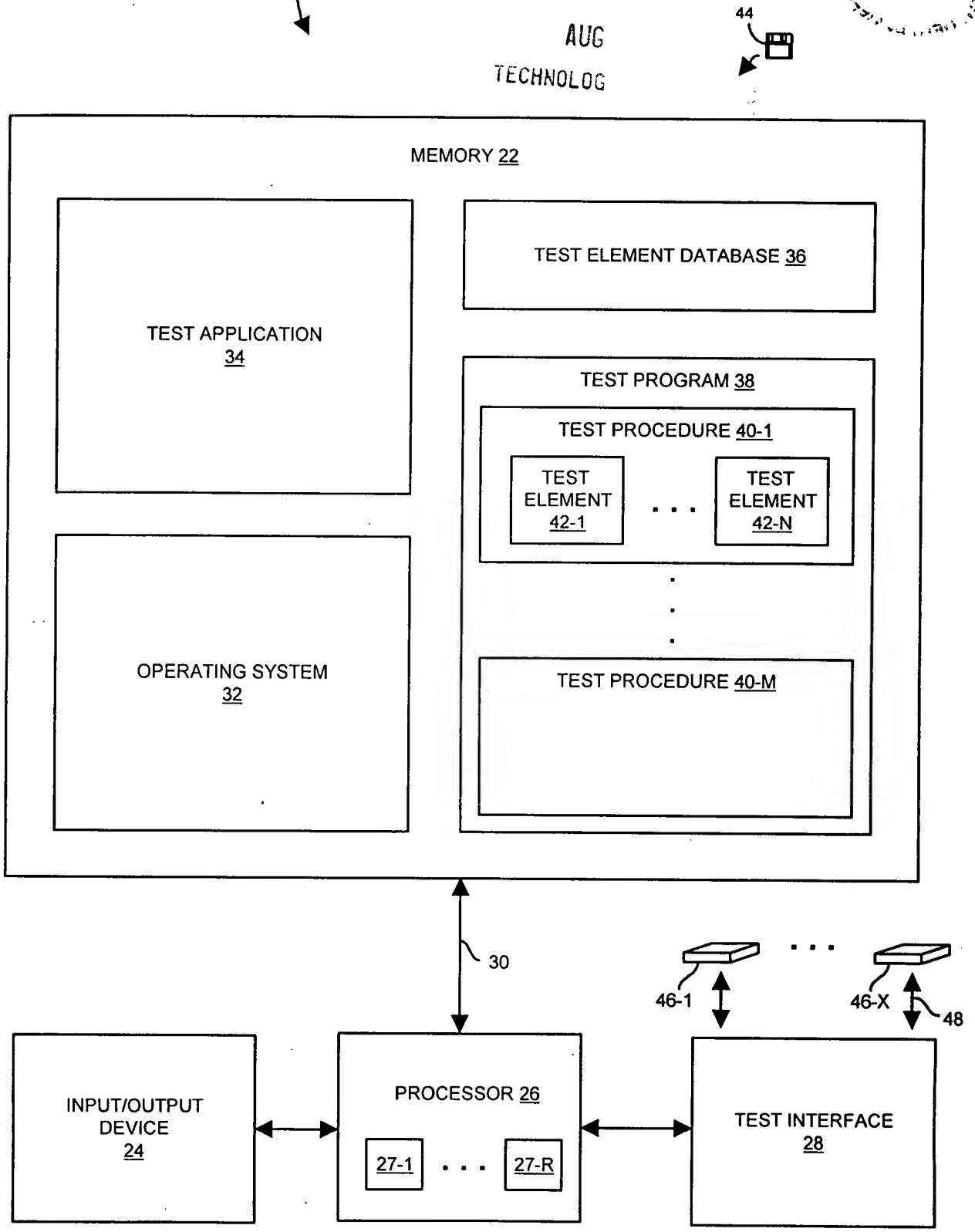

FIG. 1

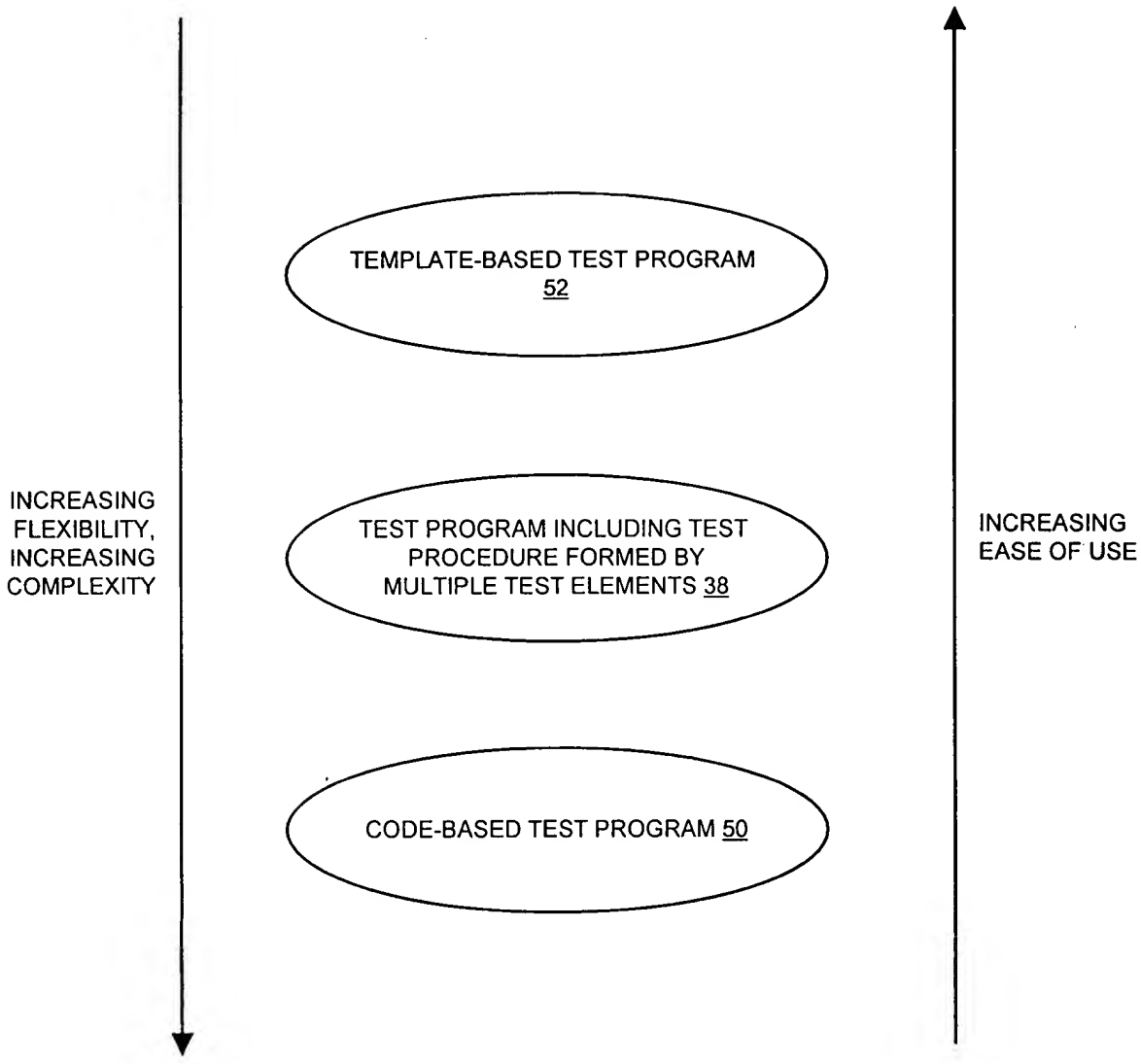
TEMPLATE-BASED TEST PROGRAM 52
TEST PROGRAM INCLUDING TEST PROCEDURE FORMED BY MULTIPLE TEST ELEMENTS 38
CODE-BASED TEST PROGRAM 50
INCREASING FLEXIBILITY, INCREASING COMPLEXITY
INCREASING EASE OF USE

FIG. 2

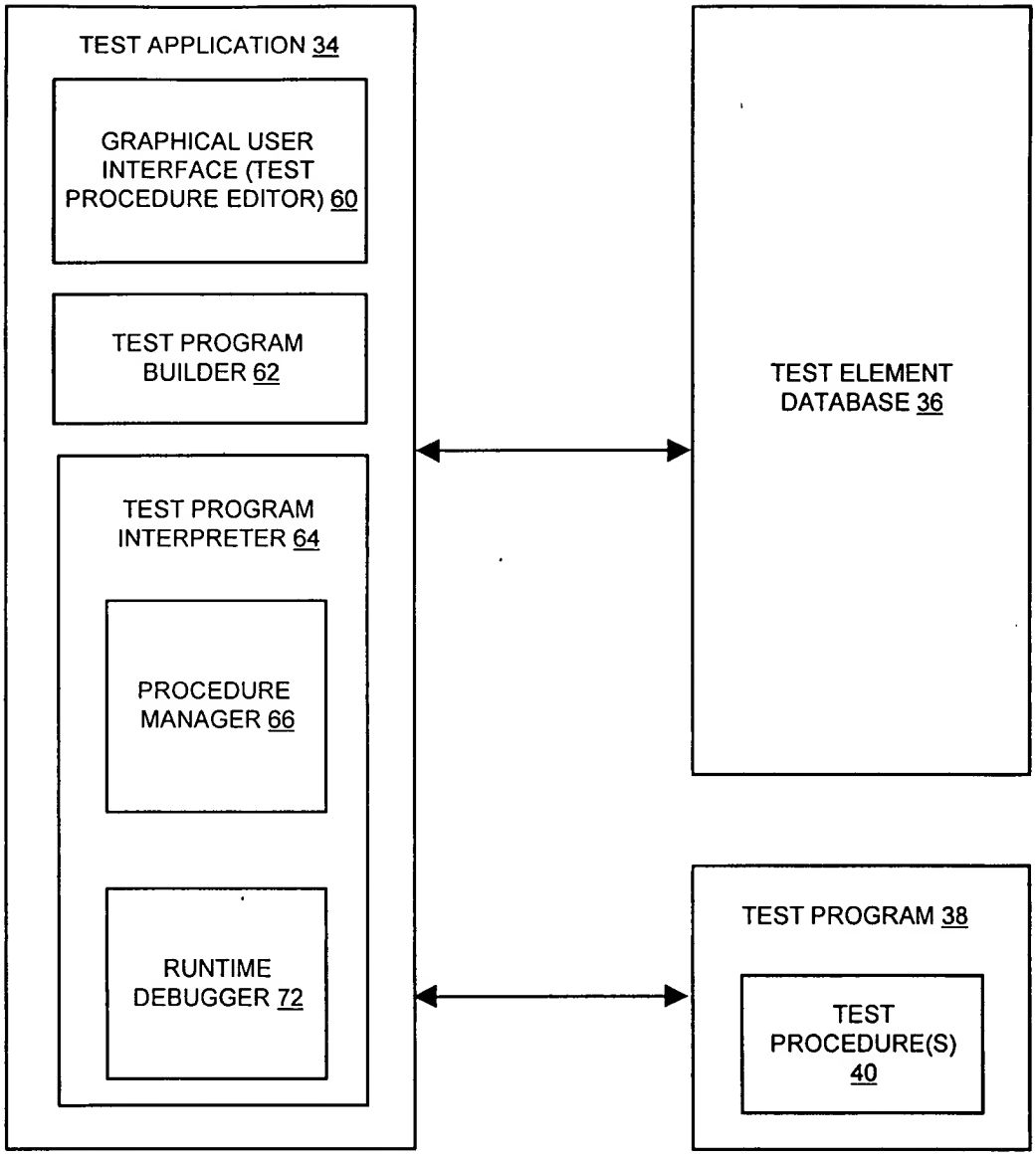
TEST APPLICATION 34
GRAPHICAL USER INTERFACE (TEST PROCEDURE EDITOR) 60
TEST PROGRAM BUILDER 62
TEST PROGRAM INTERPRETER 64
PROCEDURE MANAGER 66
RUNTIME DEBUGGER 72
TEST ELEMENT DATABASE 36
TEST PROGRAM 38
TEST PROCEDURE(S) 40

FIG. 3

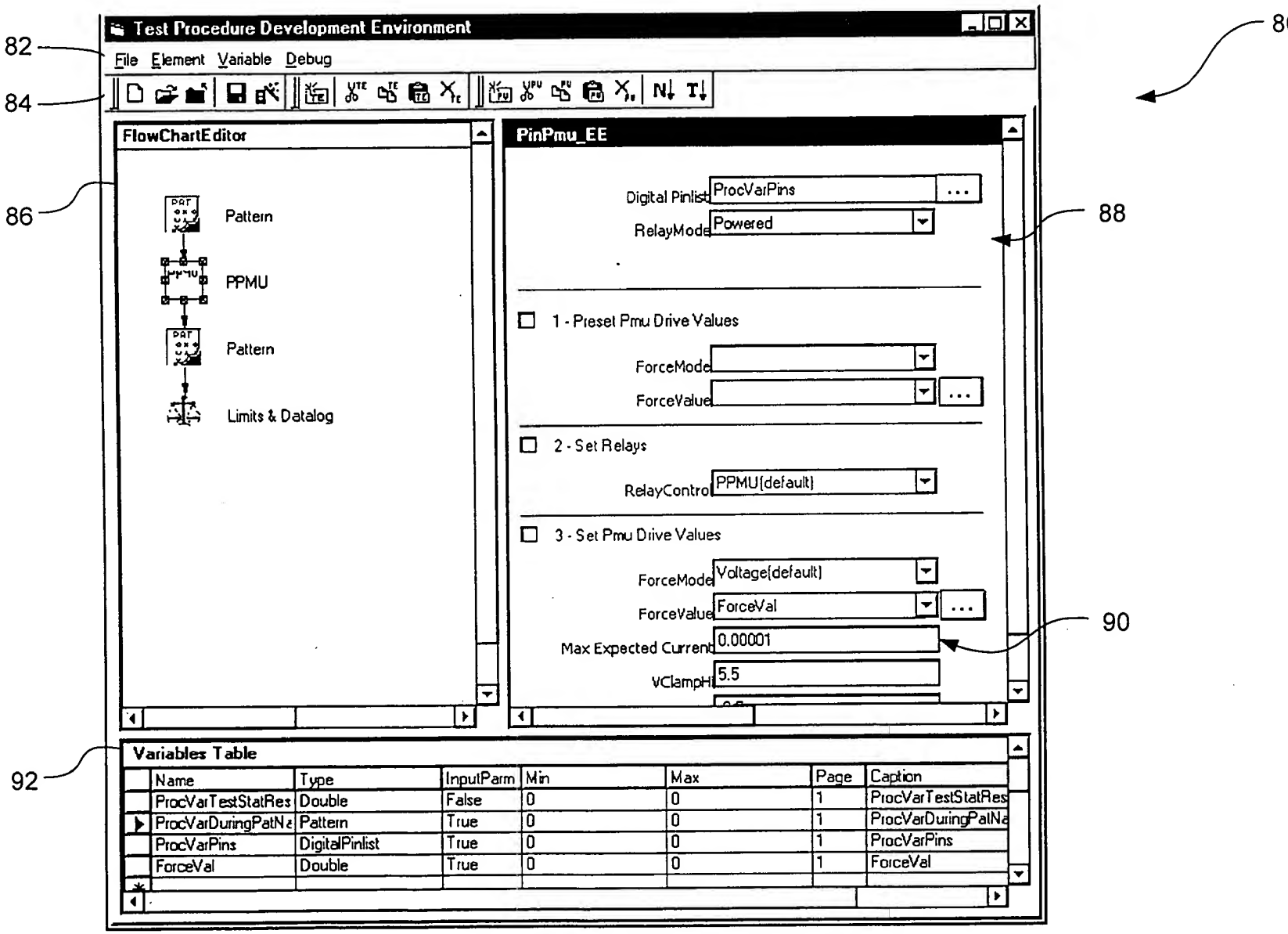
Test Procedure Development Environment
File Element Variable Debug
FlowChartEditor
Pattern
PPMU
Pattern
Limits & Datalog
PinPmu_EE
Digital Pinlist ProcVarPins
RelayMode Powered
1 - Preset Pmu Drive Values
ForceMode
ForceValue
2 - Set Relays
RelayControl PPMU(default)
3 - Set Pmu Drive Values
ForceMode Voltage(default)
ForceValue ForceVal
Max Expected Current 0.00001
VClampHi 5.5
Variables Table
Name Type InputParm Min Max Page Caption
ProcVarTestStatRes Double False 0 0 1 ProcVarTestStatRes
ProcVarDuringPatNa Pattern True 0 0 1 ProcVarDuringPatNa
ProcVarPins DigitalPinlist True 0 0 1 ProcVarPins
ForceVal Double True 0 0 1 ForceVal
80
82
84
86
88
90
92

FIG. 4

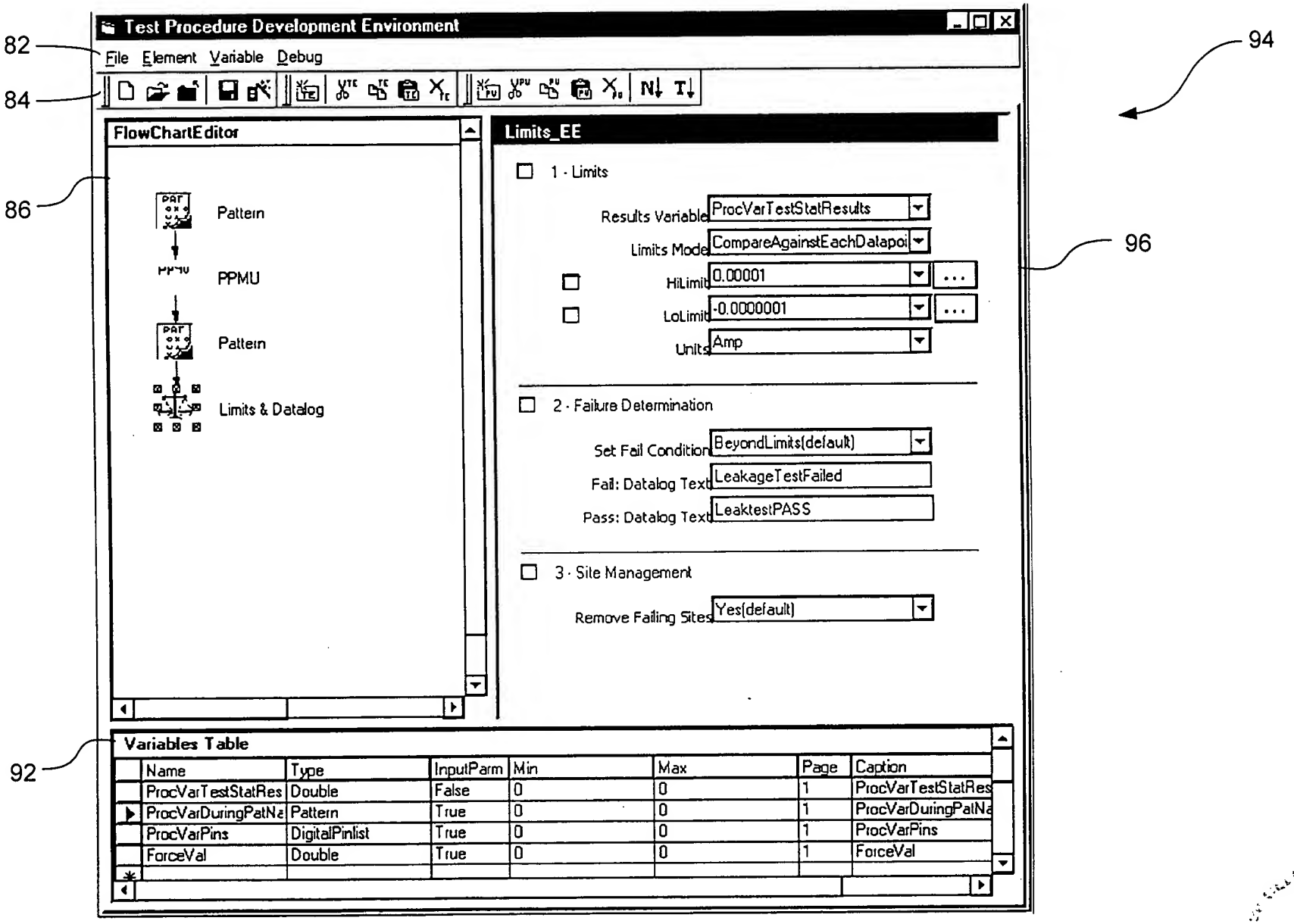
Test Procedure Development Environment
File Element Variable Debug
FlowChartEditor
Pattern
PPMU
Pattern
Limits & Datalog
Limits_EE
1 - Limits
Results Variable: ProcVarTestStatResults
Limits Mode: CompareAgainstEachDatapoi
HiLimit: 0.00001
LoLimit: -0.0000001
Units: Amp
2 - Failure Determination
Set Fail Condition: BeyondLimits(default)
Fail: Datalog Text: LeakageTestFailed
Pass: Datalog Text: LeaktestPASS
3 - Site Management
Remove Failing Sites: Yes(default)
Variables Table
Name | Type | InputParm | Min | Max | Page | Caption
ProcVarTestStatRes | Double | False | 0 | 0 | 1 | ProcVarTestStatRes
ProcVarDuringPatNa | Pattern | True | 0 | 0 | 1 | ProcVarDuringPatNa
ProcVarPins | DigitalPinlist | True | 0 | 0 | 1 | ProcVarPins
ForceVal | Double | True | 0 | 0 | 1 | ForceVal
82
84
86
92
94
96

FIG. 5

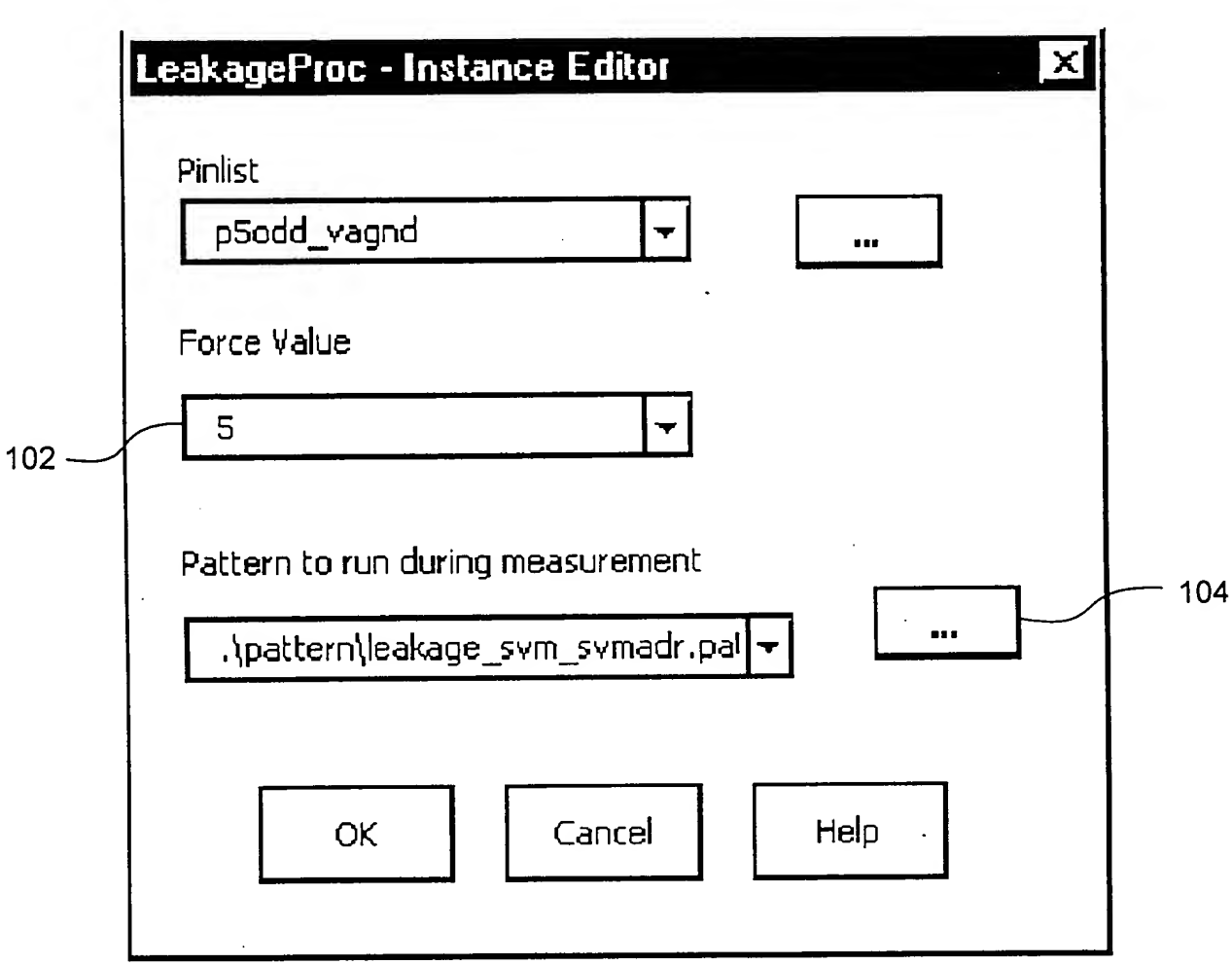
LeakageProc - Instance Editor
Pinlist
p5odd_vagnd
...
Force Value
5
Pattern to run during measurement
.\pattern\leakage_svm_svmadr.pal
...
OK
Cancel
Help
100
102
104

FIG. 6

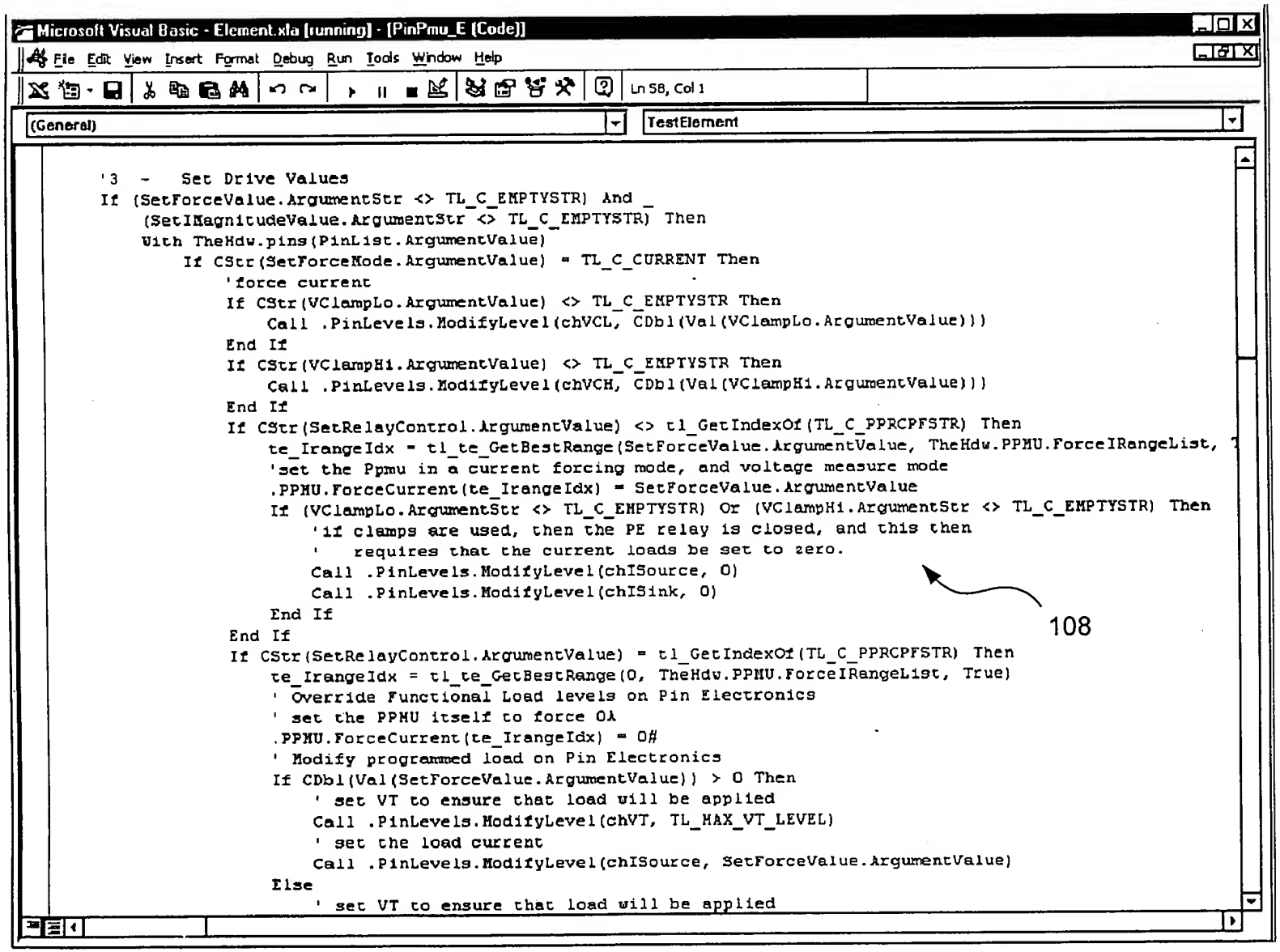
Microsoft Visual Basic - Element.xla [running] - [PinPmu_E (Code)]
File Edit View Insert Format Debug Run Tools Window Help
Ln 58, Col 1
(General)
TestElement
'3 - Set Drive Values
If (SetForceValue.ArgumentStr <> TL_C_EMPTYSTR) And _
(SetMagnitudeValue.ArgumentStr <> TL_C_EMPTYSTR) Then
With TheHdw.pins(PinList.ArgumentValue)
If CStr(SetForceMode.ArgumentValue) = TL_C_CURRENT Then
'force current
If CStr(VClampLo.ArgumentValue) <> TL_C_EMPTYSTR Then
Call .PinLevels.ModifyLevel(chVCL, CDbl(Val(VClampLo.ArgumentValue)))
End If
If CStr(VClampHi.ArgumentValue) <> TL_C_EMPTYSTR Then
Call .PinLevels.ModifyLevel(chVCH, CDbl(Val(VClampHi.ArgumentValue)))
End If
If CStr(SetRelayControl.ArgumentValue) <> tl_GetIndexOf(TL_C_PPRCPFSTR) Then
te_IrangeIdx = tl_te_GetBestRange(SetForceValue.ArgumentValue, TheHdw.PPMU.ForceIRangeList,
'set the Ppmu in a current forcing mode, and voltage measure mode
.PPMU.ForceCurrent(te_IrangeIdx) = SetForceValue.ArgumentValue
If (VClampLo.ArgumentStr <> TL_C_EMPTYSTR) Or (VClampHi.ArgumentStr <> TL_C_EMPTYSTR) Then
'if clamps are used, then the PE relay is closed, and this then
' requires that the current loads be set to zero.
Call .PinLevels.ModifyLevel(chISource, 0)
Call .PinLevels.ModifyLevel(chISink, 0)
End If
End If
If CStr(SetRelayControl.ArgumentValue) = tl_GetIndexOf(TL_C_PPRCPFSTR) Then
te_IrangeIdx = tl_te_GetBestRange(0, TheHdw.PPMU.ForceIRangeList, True)
' Override Functional Load levels on Pin Electronics
' set the PPMU itself to force 0A
.PPMU.ForceCurrent(te_IrangeIdx) = 0#
' Modify programmed load on Pin Electronics
If CDbl(Val(SetForceValue.ArgumentValue)) > 0 Then
' set VT to ensure that load will be applied
Call .PinLevels.ModifyLevel(chVT, TL_MAX_VT_LEVEL)
' set the load current
Call .PinLevels.ModifyLevel(chISource, SetForceValue.ArgumentValue)
Else
' set VT to ensure that load will be applied
106
108

FIG. 7

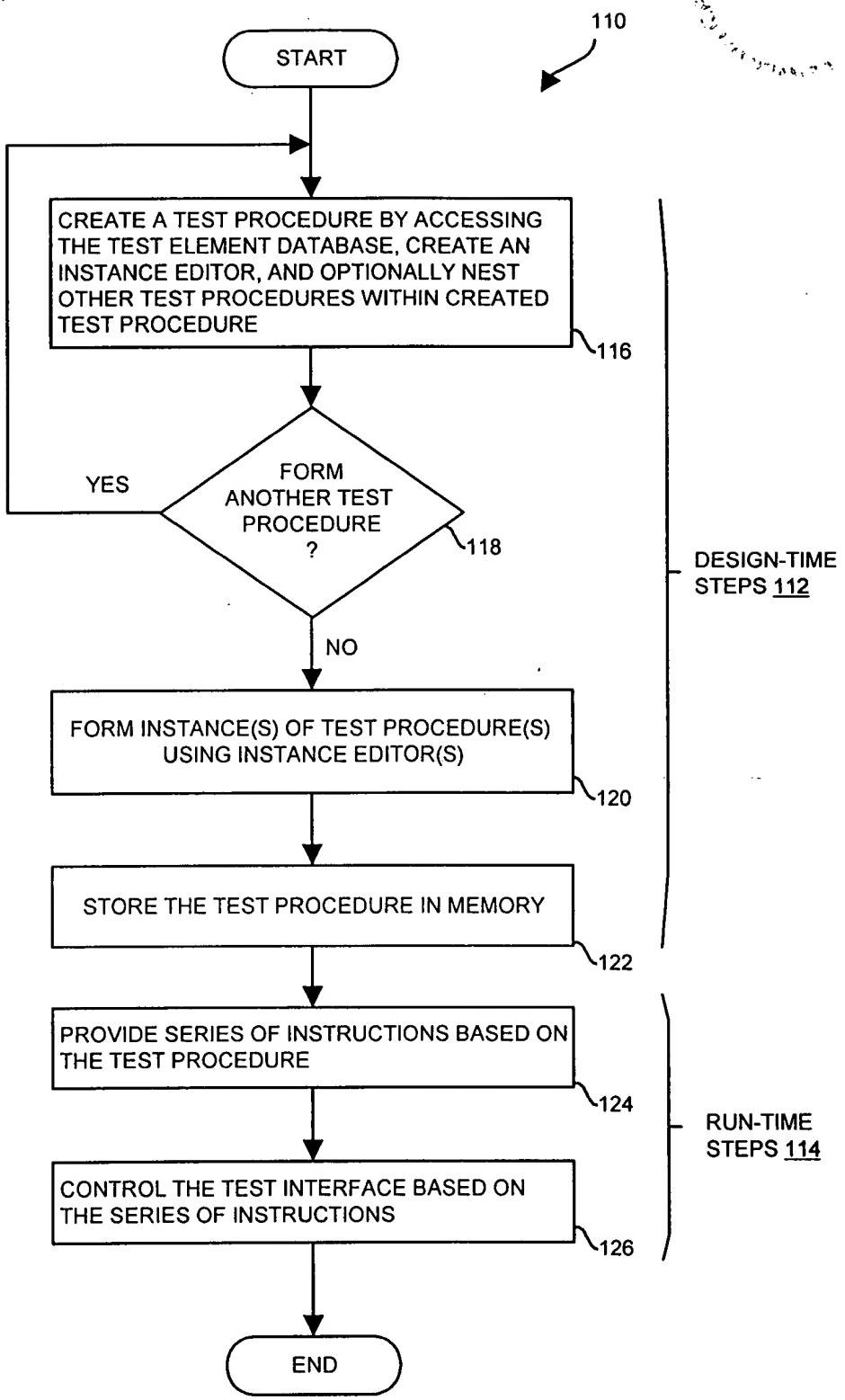
110
START
CREATE A TEST PROCEDURE BY ACCESSING THE TEST ELEMENT DATABASE, CREATE AN INSTANCE EDITOR, AND OPTIONALLY NEST OTHER TEST PROCEDURES WITHIN CREATED TEST PROCEDURE
116
FORM ANOTHER TEST PROCEDURE ?
118
YES
NO
FORM INSTANCE(S) OF TEST PROCEDURE(S) USING INSTANCE EDITOR(S)
120
STORE THE TEST PROCEDURE IN MEMORY
122
PROVIDE SERIES OF INSTRUCTIONS BASED ON THE TEST PROCEDURE
124
CONTROL THE TEST INTERFACE BASED ON THE SERIES OF INSTRUCTIONS
126
END
DESIGN-TIME STEPS 112
RUN-TIME STEPS 114

FIG. 8

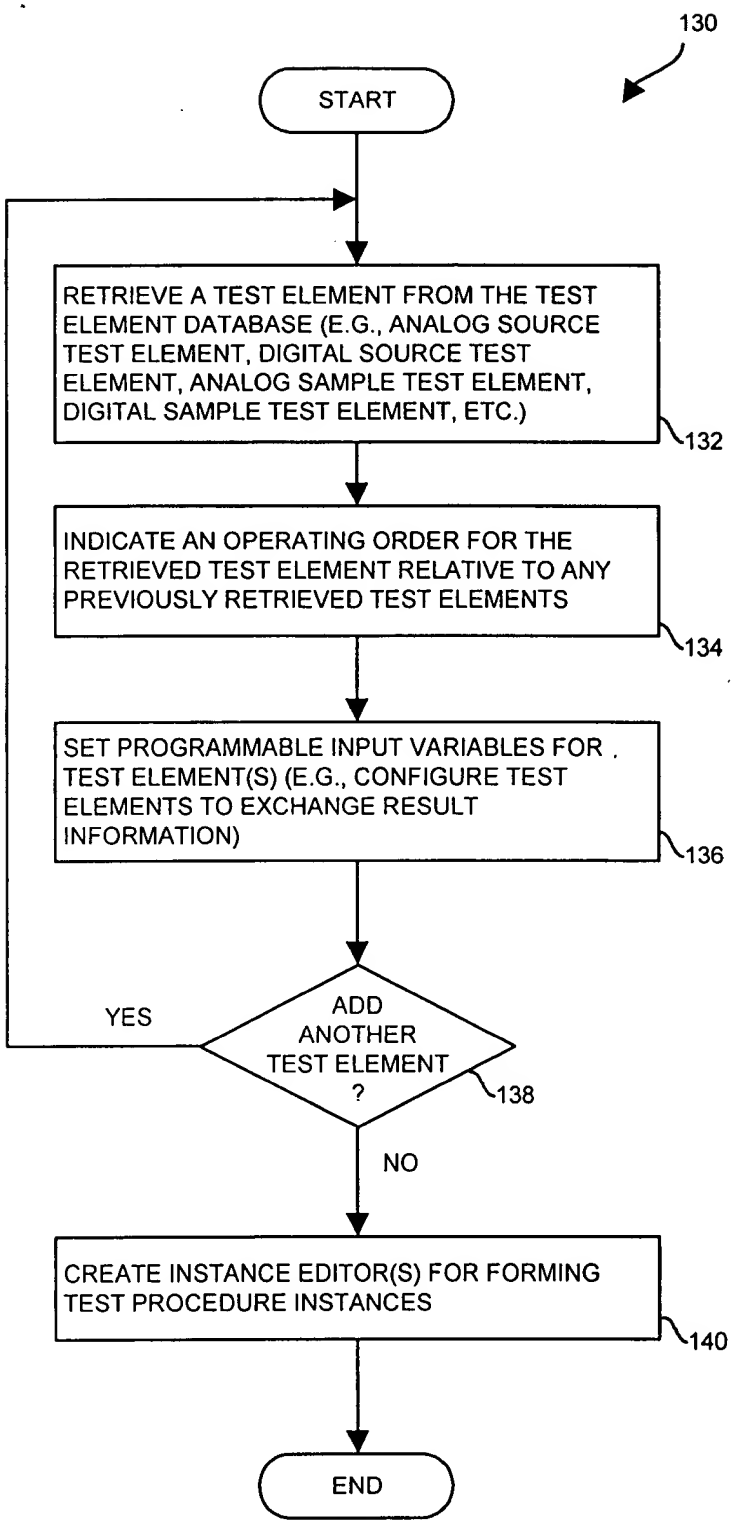
130
START
RETRIEVE A TEST ELEMENT FROM THE TEST ELEMENT DATABASE (E.G., ANALOG SOURCE TEST ELEMENT, DIGITAL SOURCE TEST ELEMENT, ANALOG SAMPLE TEST ELEMENT, DIGITAL SAMPLE TEST ELEMENT, ETC.)
132
INDICATE AN OPERATING ORDER FOR THE RETRIEVED TEST ELEMENT RELATIVE TO ANY PREVIOUSLY RETRIEVED TEST ELEMENTS
134
SET PROGRAMMABLE INPUT VARIABLES FOR TEST ELEMENT(S) (E.G., CONFIGURE TEST ELEMENTS TO EXCHANGE RESULT INFORMATION)
136
ADD ANOTHER TEST ELEMENT ?
138
YES
NO
CREATE INSTANCE EDITOR(S) FOR FORMING TEST PROCEDURE INSTANCES
140
END

FIG. 9